

TECHNIQUE FOR DYNAMICALLY ADJUSTING LOOKAHEAD TIME FOR  
CHANNEL MAP MESSAGES TO ACHIEVE OPTIMAL PACKET PERFORMANCE  
OVER AN ACCESS NETWORK

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Abstract of the Disclosure

10 A technique is described for improving packet performance in an access network.  
The access network comprises a Head End and a plurality of nodes. The access network  
further includes at least one downstream channel used by the Head End to communicate  
with a first plurality of network nodes, and at least one shared-access upstream channel  
used by the first plurality of nodes to communicate with the Head End. The access control  
system includes a MAP generating device for generating MAP messages of future slot  
allocations on the at least one upstream channel. Each MAP message specifies a specific,  
future allocation start time (SAT) for that particular MAP message. The SAT for each  
15 MAP message is determined by adding a lookahead time (LAT) value to a current time  
value at the Head End which is obtained while the MAP message is being generated by  
the MAP generating device. Propagation delay data associated with at least a portion of  
the plurality of nodes using the at least one upstream channel is obtained. The  
propagation delay data corresponding to a particular node is obtained from ranging  
20 procedures performed between the access control system and the node. The propagation  
delay data is then used to dynamically adjust the lookahead time value associated with the  
generating of MAP messages for the at least one upstream channel. According to a  
specific aspect of the invention, the lookahead time value is dynamically calculated using  
a minimum propagation delay value, which corresponds to a farthest on-line node on the  
25 at least one upstream channel. According to another aspect of the invention, the minimum  
lookahead time value is used for generating MAP messages which do not include initial  
ranging slot allocations, and a second Lookahead time value is used for generating MAP  
messages which include at least one initial ranging slot allocation.